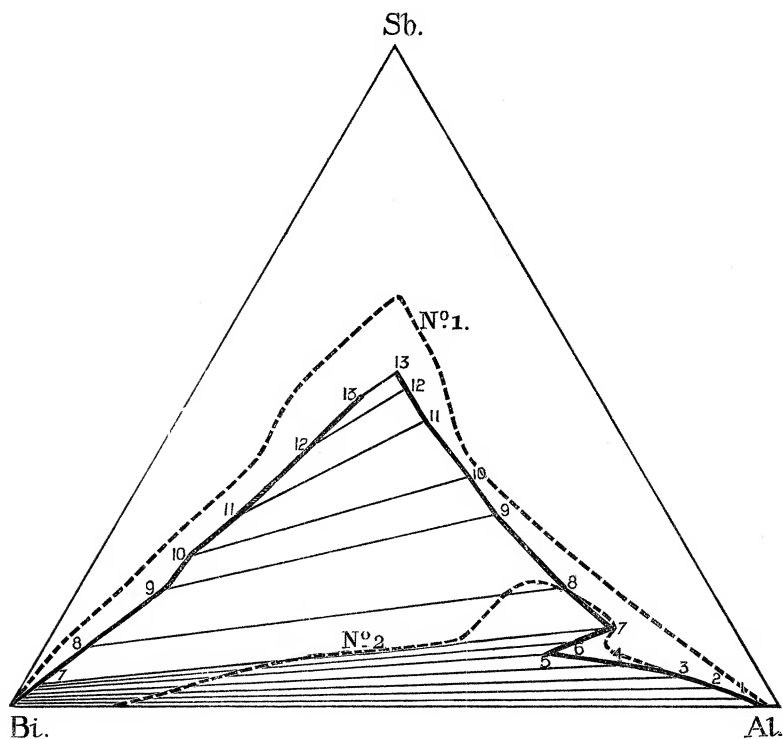


FIG. 3.



direction was reversed according as lead or bismuth was present, viz., downwards to the left in the first case, and to the right in the second.

II. "On the Photographic Arc Spectrum of Iron Meteorites."

By Professor J. NORMAN LOCKYER, C.B., F.R.S. Received December 22, 1893.

(Abstract.)

This communication consists of a discussion of the photographic arc spectra of the Nejed and Obernkirchen meteorites, the wavelengths of the lines being based upon those determined by means of the photographic arc spectrum of electrolytic iron, a paper concerning which has been recently communicated to the Society. The portion of the spectrum covered by the photographs extends from K to D.

The wave-lengths, intensities, and origins of the lines in the spectra are given in tabular form.

The following general conclusions have been arrived at:—

1. The spectra of the two meteorites closely agree, both as regards the number and intensities of the lines, the slight difference in number being probably due to a difference of exposure.

2. The meteoritic spectra and the solar spectrum show considerable similarity. The iron lines in each have about the same relative intensity, thus indicating that the temperature of the iron vapour in the sun which produces the majority of the iron lines is about the same as that of the electric arc.

3. The results of the inquiry into the origin of the lines, in addition to those of iron, may be thus summarised:—

Substances certainly present.

Manganese.
Cobalt.
Nickel.
Chromium.
Titanium.
Copper.
Barium.
Calcium.
Sodium.
Potassium.

Substances probably present.

Strontium.
Lead.
Lithium.
Cerium.
Molybdenum.
Vanadium.
Didymium.
Uranium.
Tungsten.

4. Of the few faint lines in the tables, for which no origins have been found from the Kensington maps of metallic arc spectra, the majority are apparently coincident with lines mapped by Messrs. Kayser and Runge in the iron spectrum. These do not appear in the Kensington photographs, probably on account of insufficient exposure.

5. By noting the difference in intensity of identical lines in the two spectra, a rough approximation can be made to the relative quantities of the different substances present in the meteorites. Thus it is found that the chief chemical difference between the two meteorites is that there is a preponderance of calcium in the Nejed, and of nickel, barium, and strontium in the Obernkirchen, meteorite.